



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/552,996

10/10/2006

Hiroshi Matsuda

00684.102864

5856

5514

7590

05/13/2008

FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER

SAHLE, MAHIDERE S

ART UNIT

PAPER NUMBER

2873

MAIL DATE

DELIVERY MODE

05/13/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,996	<b>Applicant(s)</b> MATSUDA, HIROSHI	
	<b>Examiner</b> MAHIDERE S. SAHLE	<b>Art Unit</b> 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)                |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application      |
| Paper No(s)/Mail Date <u>10/13/05 &amp; 12/18/06</u> .                                 | 6) <input checked="" type="checkbox"/> Other: <u>Detailed Action</u> . |

### **DETAILED ACTION**

Claims 1-16 are pending in this application.

#### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

Acknowledgement is made of receipt of Information Disclosure Statement(s) (PTO-1449) filed 10/13/05 and 12/18/06. An initialed copy is attached to this Office Action.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **1-4, 6-10, and 12-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (USPG Pub No. 2003/0048521) in view of Akins et al. (USP No. 6,166,787).

Regarding claim 1, Ikeda et al. discloses a display apparatus (paragraph 0032, line 1), comprising: a substrate on which a plurality of closed spaces are two-dimensionally disposed along a surface of said substrate (paragraph 0032, lines 3-6), a

plurality of particles (5) contained in each of the closed spaces (paragraph 0032, lines 6-9), and a reflection surface for reflecting light which enters each of the closed spaces (paragraph 0068, lines 5-6), wherein said particles (5) are moved in each closed space (paragraph 0042), between a position at which they are diffused to cover said reflection surface and a position at which they are collected to expose said reflection surface (see figures 4A-B), to change an intensity of reflected light so as to provide a bright display state and a dark display state (paragraph 0043), wherein at least a part of the reflection surface diffuse-reflecting incident light with a directivity when said particles are located at the position at which the reflection surface is exposed (paragraph 0068, lines 8-11).

Ikeda et al. discloses the claimed invention except for wherein a light intensity of the diffuse reflection with the directivity has such an angular distribution that: (1) an amount of reflected light toward the position at which said particles are collected is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface, and (2) an amount of reflected light toward positions other than the position at which said particles are collected is larger than that of reflected light toward the position at which said particles are collected. In the same field of endeavor, Akins et al.

discloses wherein a light intensity of the diffuse reflection with the directivity has such an angular distribution that: (1) an amount of reflected light toward the position at which said particles are collected is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface (col. 7, lines 26-31), and (2) an amount of reflected light toward positions other than the position at which said particles are collected is larger than that of reflected light toward the position at which said particles

are collected (col. 7, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with the light intensity of the diffuse reflection with the directivity has such an angular distribution that: (1) an amount of reflected light toward the position at which said particles are collected is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface, and (2) an amount of reflected light toward positions other than the position at which said particles are collected is larger than that of reflected light toward the position at which said particles are collected of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 2, Ikeda et al. discloses a display apparatus (paragraph 0032, line 1), comprising: a substrate on which a plurality of closed spaces are two-dimensionally disposed along a surface of said substrate (paragraph 0032, lines 3-6), a plurality of particles (5) contained in each of the closed spaces (paragraph 0032, lines 6-9), a partition wall (3) for dividing the closed spaces into each of the closed spaces in a direction along the surface of the substrate (see figure 1, paragraph 0044, lines 1-2), and a reflection surface for reflecting light which enters each of the closed spaces (paragraph 0068, lines 5-6), wherein said particles (5) are moved in each closed space (paragraph 0042), between a position at which they are diffused to cover said reflection surface and a position at which they are collected to expose said reflection surface (see figures 4A-B), to change an intensity of reflected light so as to provide a bright display state and a dark display state (paragraph 0043), wherein at least a part of the reflection

Art Unit: 2873

surface diffuse-reflecting incident light with a directivity when said particles are located at the position at which the reflection surface is exposed (paragraph 0068, lines 8-11). Ikeda et al. discloses the claimed invention except for a light intensity of the diffuse reflection with the directivity has such an angular distribution that: (1) an amount of reflected light toward the partition wall is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface (col. 7, lines 26-31), and (2) an amount of reflected light toward portions other than the partition wall is larger than that of reflected light toward the partition wall (col. 7, lines 26-31). In the same field of endeavor, Akins et al. discloses a light intensity of the diffuse reflection with the directivity has such an angular distribution that: (1) an amount of reflected light toward the partition wall is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface, and (2) an amount of reflected light toward portions other than the partition wall is larger than that of reflected light toward the partition wall. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with a light intensity of the diffuse reflection with the directivity has such an angular distribution that: (1) an amount of reflected light toward the partition wall is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface, and (2) an amount of reflected light toward portions other than the partition wall is larger than that of reflected light toward the partition wall of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 3, Ikeda et al. discloses wherein the reflection surface has a portion close to the position at which the particles (5) are collected or the partition wall (3) (paragraph 0043, lines 4-9). Ikeda et al. discloses the claimed invention except for the directivity at the portion is stronger than those at other portions of the reflection surface. In the same field of endeavor, Akins et al. discloses the directivity at the portion is stronger than those at other portions of the reflection surface (col. 7, lines 18-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with the directivity at the portion is stronger than those at other portions of the reflection surface of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 4, Ikeda et al. discloses the claimed invention except for wherein the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the position at which the particles are collected or the partition wall so as to be localized toward a direction apart from the position or the partition wall and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the position or the partition wall. In the same field of endeavor, Akins et al. discloses wherein the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the position at which the particles are collected or the partition wall so as to be localized toward a direction apart

from the position or the partition wall and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the position or the partition wall (see figure 1, col. 7, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the position at which the particles are collected or the partition wall so as to be localized toward a direction apart from the position or the partition wall and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the position or the partition wall of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 6, Ikeda et al. discloses wherein the reflection surface is substantially a mirror surface in an area close to the position at which the particles are collected or the partition wall (paragraph 0074, lines 11-13), and is a diffuse reflection surface in an area other than the area close to the position or the partition wall (paragraph 0068, lines 5-11).

Regarding claim 7, Ikeda et al. discloses wherein at least a portion of the reflection surface in an area close to the position at which the particles are collected or the partition wall is inclined upward the position or the partition wall (see figures 2C-D, 4B).



Regarding claim 8, Ikeda et al. discloses wherein at least a portion of the substrate is transparent (paragraph 0040, lines 1-2). Ikeda et al. discloses the claimed invention except for the reflection surface is semitransparent, and a light source is disposed below the substrate. In the same field of endeavor, Akins et al. discloses the reflection surface is semitransparent (col. 7, lines 20-22), and a light source is disposed below the substrate (col. 7, lines 22-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with the reflection surface is semitransparent, and a light source is disposed below the substrate of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 9, Ikeda et al. discloses wherein the apparatus further comprises a front scattering layer disposed on an observer's side (paragraph 0068, lines 5-11).

Regarding claim 10, Ikeda et al. discloses wherein the plurality of particles are substantially black (paragraph 0043, lines 4-5).

Regarding claim 12, Ikeda et al. discloses wherein in each of the closed spaces, a pair of electrodes are disposed and a surface of at least one of the electrodes constitutes at least a portion of the reflection surface (paragraph 0042, paragraph 0068, lines 5-6).

Regarding claim 13, Ikeda et al. discloses wherein in each of the closed spaces (paragraph 0044, lines 1-2). Ikeda et al. discloses the claimed invention except for a color filter is disposed on the reflection surface. In the same field of endeavor, Akins et

Art Unit: 2873

al. discloses a color filter (20) is disposed on the reflection surface (16) (col. 7, lines 18-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with a color filter is disposed on the reflection surface of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 14, Ikeda et al. discloses wherein in each of the closed spaces, a pair of electrodes are disposed and at least one of the electrodes is transparent and disposed on the reflection surface (paragraph 0040, lines 1-2, paragraph 0068, lines 5-6).

Regarding claim 15, Ikeda et al. discloses wherein in each of the closed spaces (paragraph 0044, lines 1-2), and the transparent electrode (see figure 3, paragraph 0040, lines 1-2). Ikeda et al. discloses the claimed invention except for a color filter is disposed between the reflection surface and the transparent electrode. In the same field of endeavor, Akins et al. discloses a color filter (20) is disposed between the reflection surface (16) (col. 7, lines 18-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with a color filter is disposed between the reflection surface of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 16, Ikeda et al. discloses wherein the plurality of particles (5) are electrically charged particles (5) and are dispersed in an insulating liquid (4) in each of the closed spaces (paragraph 0032, lines 6-9).

Claim **5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (USPG Pub No. 2003/0048521) in view of Akins et al. (USP No. 6,166,787), as applied to claim 4 above, and further in view of Iwai et al. (JPO 11-109392).

Regarding claim 5, Ikeda et al. in view of Akins et al. discloses particles (5) (see figure 1 of Ikeda et al. reference). Ikeda et al. in view of Akins et al. discloses the claimed invention except for wherein the reflection surface is divided into a plurality of reflection areas different in reflection characteristic from each other, and the angular distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity with an increasing distance of the particles from the position at which the particles are collected or the partition wall and that it is changed stepwise or continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance. In the same field of endeavor, Iwai et al. discloses the reflection surface (8a) is divided into a plurality of reflection areas different in reflection characteristic from each other (see figure 12), and the angular distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity and that it is changed stepwise or continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance (see figure 12, paragraphs 0082-0083). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. in view of Akins et al. with the reflection surface is divided into a plurality of

reflection areas different in reflection characteristic from each other, and the angular distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity and that it is changed stepwise or continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance of Iwai et al. for the purpose of obtaining a wide angle of visual field and improving reflectance, contrast and color purity (abstract of Yoshio et al. reference).

Claim **11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (USPG Pub No. 2003/0048521) in view of Akins et al. (USP No. 6,166,787), as applied to claim 2 above, and further in view of Enomoto et al. (USPG Pub No. 2002/0030785).

Regarding claim 11, Ikeda et al. in view of Akins et al. discloses the claimed invention except for wherein the partition wall has a color substantially identical to a color of the plurality of particles. In the same field of endeavor, Enomoto et al. discloses the partition wall has a color substantially identical to a color of the plurality of particles (paragraph 0064, lines 3-5). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. in view of Akins et al. with the partition wall has a color substantially identical to a color of the plurality of particles of Enomoto et al. for the purpose of providing a desired change of color as the particles are mobilized.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAHIDERE S. SAHLE whose telephone number is (571)270-3329. The examiner can normally be reached on Monday thru Thursday 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MSS  
/David N. Spector/  
for Ricky Mack, SPE of Art Unit 2873